

## REMARKS

Claims 1 and 12 have been amended. Claims 18 and 19 have been added. Claims 2, 3, 14 and 15 have been cancelled. Claims 1, 4-12 and 16-19 remain for further consideration. No new matter has been added.

The objections and rejections shall be taken up in the order presented in the Official Action.

4. Claims 1-8, 11, 12 and 14-17 currently stand rejected for allegedly being obvious in view of the combined teachings of U.S. Patent No. 6,111,280 to Gardner et al (hereinafter "Gardner") and U.S. Patent No. 6,463,789 to Moos et al (hereinafter "Moos").

### CLAIM 1

Claim 1 recites an integrated gas sensor, which includes the feature of "*a field electrode being disposed under the gas-sensitive semiconductor film and disposed above and electrically in contact with a semiconductive substrate....*" (cl. 1). The Official Action acknowledges that Gardener fails to teach such a position of the field electrode. (Official Action, pg. 3). However, the Official Action then contends that Moos teaches "*multiple equivalent embodiments of a gas sensor (Fig. 5-8) where the electrodes are either in contact with the substrate or an insulating layer, and under a functional layer or above a functional layer.*" (Official Action, pg. 3). The Official Action concludes that it would have been obvious to one of ordinary skill in the art to have modified the gas sensor in Gardener with an equivalent structure in Moos. (Official Action, pg. 3). This rejection is improper for a number of reasons.

#### THE REFERENCES ARE NOT COMBINABLE

A person of ordinary skill in the field of semiconductor gas sensors would not look to Moos. The field of the present invention is semiconductor gas sensors, which include a semiconductive substrate. In contrast, Moos relates to the field of thick film devices, which do not employ a semiconductor substrate. For example, Moos clearly states that the substrate 1 is  $\text{Al}_2\text{O}_3$ , which is of course not a semiconductive material, but is rather aluminum oxide which is an insulator. So the term substrate as used in Moos is referring to an insulator, not a semiconductive device. Moos has nothing to do with the field of semiconductors, which are thin film devices, and as such a skilled person would certainly not be looking to the dissimilar technical field disclosed in Moos.

#### EVEN IF COMBINED, THE CLAIMED INVENTION IS PATENTABLE OVER THE REFERENCES

If we were to assume for the moment, without admitting that Gardner and Moos are combinable, then the resultant combination is still incapable of supporting an obviousness rejection with respect to the claimed invention.

The Official Action contends that the field electrode recited in claim 1 reads on the metallization layer 9 illustrated in FIG. 1a of Gardner. This contention is based upon an incorrect/incomplete technical reading of Gardner. First, Gardener teaches, as illustrated in FIG. 1a, that *"a MOSFET heater 6, is formed in the sensing area by known CMOS SOI or Bi-CMOS SOI processing and comprises a n+ source layer 7 and a n+ drain layer 8 diffused in the lowly doped p-type silicon layer 4."* (col. 3, lines 32-35). That is, according to a fair and proper reading of Gardener, the source 7 and the drain 8 are configured to form the MOSFET heater 6. The metallization layer 9 is associated with the MOSFET heater 6. In contrast, claim 1 recites

the feature of “a *field electrode*”, NOT a heater, “*being disposed under the gas-sensitive semiconductor film and disposed above and electrically in contact with a semiconductive substrate....*” (cl. 1). Applicants respectfully submit that the field electrode recited in claim 1 is incapable of reading on the metallization layer 9 associated with the source 7 or the drain 8 disclosed in Gardener since the source 7 and the drain 8 are configured as a MOSFET heater 6.

Second, again assuming for the moment, without admitting, that Gardener and Moos are properly combinable, the combination still would not teach the feature of “a *field electrode being disposed under the gas-sensitive semiconductor film and disposed above and electrically in contact with a semiconductive substrate....*” (emphasis added, cl. 1). Specifically, Moos teaches need for shielding the heating layer 4 from the sensor (i.e., the functional layer and the electrodes) to reduce associated interference. (Moos, col. 3, lines 42-61). According to a fair and proper reading of Moos, the shielding is accomplished using a shielding layer 2 as well as locating the heating layer 4 below the insulator substrate 1. (Moos, col. 5, lines 34-48). Significantly, Moos does not teach or suggest that the heating layer may be located above the insulator substrate 1. As a result, at most the combined prior art references, according to the Official Action, would teach locating the sensor (i.e., the metallisation layer 17 and the gas sensitive layer 18) above the substrate, and locating the MOSFET heater 6 (i.e., the source 7 and the drain 8) below the substrate. In addition, a platinum shielding layer according to Moos would be located somewhere between the sensor and the MOSFET heater 6. That is, the combination would merely teach locating the source 7 and the drain 8 of Gardener below the silicon substrate 2 according to the shielding teachings of Moos. Therefore, the combination would still fail to teach or suggest the feature of “a *field electrode being disposed under the gas-*

*sensitive semiconductor film and disposed above and electrically in contact with a semiconductive substrate....”* (cl. 1, emphasis added).

In addition, again it is worth noting that Moos merely discloses the use of an insulator as a substrate. Moos neither discloses nor suggests a semiconductive substrate, or a semiconductor sensor.

In summary, assuming for the moment, without admitting, that Gardener and Moos are properly combinable, the combination still would not teach the feature of *“a field electrode being disposed under the gas-sensitive semiconductor film and disposed above and electrically in contact with a semiconductive substrate....”* (cl. 1). As a result, applicants respectfully submit that claim 1 is not obvious in view of Gardener and Moos, and request that this rejection be withdrawn.

#### **CLAIMS 2-8 AND 11**

Applicants respectfully submit that these rejections are moot since independent claim 1 is patentable for at least the reasons as set forth above.

#### **CLAIM 12**

Amended claim 12 recited a gas sensor which includes the feature of *“at least one field electrode disposed between the insulator layer and the semiconductive substrate....”*. It is respectfully submitted that claim 12 is patentable for at least the same reasons set forth above with respect to claim 1. As a result, applicants respectfully submit that claim 12 is not obvious in view of Gardener and Moos, and request that this rejection be withdrawn.

**CLAIMS 14-17**

Applicants respectfully submit that these rejections are moot since independent claim 12 is patentable for at least the reasons as set forth above.

5. Claim 9 currently stands rejected for allegedly being obvious in view of Gardener, Moos and U.S. Patent No. 5,140,393 (hereinafter "Hijikigawa").

Applicants respectfully submit that this rejection is moot since independent claim 1 is patentable for at least the reasons as set forth above.

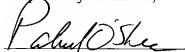
6. Claim 10 currently stands rejected for allegedly being obvious in view of Gardener, Moos and U.S. Patent No. 5,243,696 (hereinafter "Haas").

Applicants respectfully submit that this rejection is moot since independent claim 1 is patentable for at least the reasons as set forth above.

For all the foregoing reasons, reconsideration and allowance of claims 1, 4-12 and 16-19 is respectfully requested.

If a telephone interview could assist in the prosecution of this application, please call the undersigned attorney.

Respectfully submitted,



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